REMARKS

In the Office Action mailed November 17, 2004, the Examiner rejected Claims 1-15 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,532,930 to Crosby et al. in combination with U.S. Patent No. 6,118,877 to Lindemann et al., and Claims 16 and 18-20 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,603,860 to Taenzer et al. Claim 22 was allowed and Claim 17 and 21 were indicated as being allowable if rewritten in independent form to include all of the limitations of the claims from which they correspondingly depend. Applicant submits that all pending claims are in condition for allowance.

In particular, independent Claim 1 is directed to an apparatus for the use in evaluating a patient's response with an implanted element of a hearing aid, said implanted hearing aid element being adapted for directly stimulating a middle ear element of the patient in response to a communication signal transmitted transcutaneously thereto. The apparatus comprises an input port for receiving an input signal reflecting a reference acoustical output of an audiometer, a converter system for converting the input signal into an output signal representing a test communication signal, and an output port for outputting an output signal representative of the test communication signal, said output signal being adapted for driving an external transmitter for transmitting transcutaneously said test communication signal to said implanted hearing aid element, wherein upon transcutaneous transmission of said test communication signal to said implanted hearing aid element, a performance relative to the patient's response can be analyzed. Applicant submits that prior art fails to disclose or render obvious the invention of Claim 1.

In particular, Crosby et al. is directed to a cochlear implant system that comprises a multi-channel electrode array 1 implanted into the cochlear of the patient and connected to a multi-channel implanted stimulator 3 which receives power and data from an externally powered wearable speech processor 7, wherein speech processing is customized to a given patient by use of a diagnostic and programming unit 12 interconnected via an interface unit 10 to the wearable speech processor 7. Of note, and in contrast to Claim 1, Crosby et al. is in no way concerned with an implanted hearing aid apparatus element for directly stimulating a middle ear element of a patient. Further, and as noted by the Examiner, Crosby et al. fails to disclose an apparatus having an input port for receiving an input signal reflecting a reference acoustical output of an audiometer as per Claim 1. Rather, the diagnostic and programming unit 12 of Crosby et al. is referred to as comprising "a general purpose computer" or "conventional, off-the-shelf microcomputer system". Column 9, lines 7-9, and

Column 43, lines 57-59. Further, it is important to note that the diagnostic and programming unit 12 of Crosby et al. is utilized to determine the sensitivity and sharpness of perceptions elicited by stimulating the electrode array 1 (i.e. as opposed to providing any signal corresponding to a reference acoustical output of an audiometer). Column 12, lines 26-32. In particular, Crosby states that:

> "[T]he audiologist uses the PPU [diagnostic and programming unit 12] to run a program to compile a "MAP" which contains the information needed for the speech processor to operate in its normal mode. This MAP contains data on which electrode to stimulate, and at what amplitude, for various combinations of F2 frequency and F2 amplitude, for the first speech processing strategy mentioned." Column 12, lines 43-50.

In short, the diagnostic and programming unit 12 serves no function or purpose that is remotely similar to an audiometer.

In contrast to the invention of Claim 1, and in contrast to Crosby et al., Lindemann et al. is directed to non-implanted hearing aids. That is, Lindemann et al. pertains to hearing aids positioned in the ear canal of a patient. In particular, the disclosed hearing aid 100 includes a microphone 102 that receives sounds and provides an audio signal, a hearing rehabilitator 104 that receives the audio signal and provides a processed audio signal to switch 112, a filter 114 that receives the processed audio signal and provides a filtered audio signal, an amplifier 116 that amplifies the filtered audio signal, and a receiver 118 that converts the amplified audio signal into sound which is provided to a user. The term "receiver" is used in Lindemann et al. to refer to a "hearing aid speaker". Column 3, line 45 to Column 4, line 7. In contrast to Claim 1, Lindemann et al. is in no way concerned with an apparatus for evaluating a patient's response with an implanted hearing aid element that is adapted for directly stimulating a middle ear element of a patient. Further, Lindemann et al. fails to comprise an output port for outputting an output signal adapted for driving an external transmitter that provides a test communication signal, wherein upon transcutaneous transmission of the test communication signal an implanted hearing aid element's performance can be analyzed.

In addition to the respective shortcomings of Crosby et al. and Lindemann et al. Applicant submits that such references cannot be property combined to render the invention of Claim 1 obvious. In this regard, no suggestion or motivation is provided by Crosby et al. or Lindemann et al. to combine the teachings thereof. As noted above, Crosby et al. is directed to a cochlear implant

system that utilizes electrical stimulation of auditory nerve fibers to directly yield a perception of sound in the brain. In this regard, Crosby et al. states:

> "In many people who are profoundly deaf, the reason for deafness is absence of, or destruction of the hair cells in the cochlea which transduce acoustic signals into nerve impulses. These people are thus unable to derive any benefit from conventional hearing aid systems, no matter how loud the acoustic stimulus is made, because there is no way nerve impulses can be generated from sound in the normal manner. The cochlear implant system seeks to bypass these hair cells in the cochlear by presenting electrical stimulation to the auditory nerve fibers directly . . ." Column 1, lines 33-44.

In short, Crosby et al. actually teaches away from systems that amplify acoustic stimulus. On the other hand, and in stark contrast to Crosby et al., Lindemann et al. is directed to an external, non-implanted hearing aid intended for placement in the ear canal of a patient, and provides for the very amplification of acoustic stimulus that Crosby et al. teaches away from. That is, and as noted above, the hearing aid 100 of Lindemann et al. includes an amplifier 116 and a receiver 118 that converts an amplified audio signal into sound which is provided to a user. Column 4, lines 2-4. Given such contrasted teachings of Crosby et al. and Lindemann et al., Applicant submits that not only is there no suggestion or motivation to combine such teachings, such references actually frustrate, or demotivate, any such combination. Moreover, neither of such references are directed to an apparatus for use in evaluating a patient's response with an implanted hearing aid element that is adapted for directly stimulating a middle ear element of a patient as per the invention of Claim 1.

As may be appreciated, independent Claims 5, 10 and 13 are allowable over Crosby et al. and Lindemann et al. for reasons analogous to those stated above in relation to independent Claim 1. In turn, Claims 2-4 which are dependent upon Claim 1, Claims 6-9 which are dependent upon Claim 5, Claims 11-12 which are dependent upon Claim 10, and Claims 14 and 15 which are dependent upon Claim 13, are all allowable for analogous reasons, and since such claims present further combinative features not disclosed or rendered obvious by Crosby et al. and/or Lindemann et al.

Independent Claim 16 is directed to an apparatus for use in testing an external portion of a semi-implantable hearing aid, wherein the external portion is adapted for transcutaneously transmitting communication signals to an implanted portion of the hearing aid. The apparatus includes a reference receiver system adapted for receiving an input communication signal from an

exterior portion of the hearing aid and for providing a receiver signal based on the input communication signal, wherein the input communication signal is based on a test acoustical signal provided by a hearing aid analyzer, and wherein the input communication signal is adapted for transcutaneous transmission to the internal portion of a hearing aid. The apparatus further includes a signal processor for processing the receiver signal to generate an output signal of characteristics corresponding to a microphone signal of an acoustical hearing aid testing system, and an output port for outputting the output signal to the analyzer, wherein the analyzer uses the output signal to evaluate a performance of the exterior portion of the hearing aid. Applicant submits that the apparatus of Claim 16 is not anticipated by or rendered obvious by the prior art.

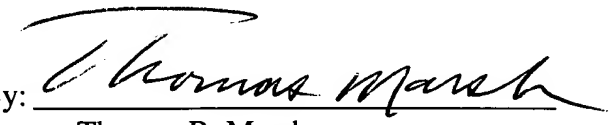
In particular, Applicant submits that the apparatus of Claim 16 is not anticipated by Taenzer et al. Rather, Taenzer et al. is directed to non-implanted magnetic audio systems in which a magnet transducer assembly 10 is supported on a tympanic membrane 12 in the ear canal 14 of a user. Column 3, lines 57-59. That is, Taenzer et al. is in no way concerned with semi-implantable systems. Further, Taenzer et al. fails to include a reference receiver system adapted for providing a receiver signal based on an input communication signal that is adapted for transcutaneous transmission to an external portion of a semi-implantable hearing aid, as per independent Claim 16. Rather, in Taenzer et al., a converter 100 is provided to pick-up magnetic fields that are generated by a coil 20. Of importance, the magnetic fields generated by coil 20 are not adapted for transcutaneous transmission to an internal portion of a hearing aid but are rather intended to vibrate a magnet transducer assembly 10 used to cause vibrations at a tympanic membrane 12. Column 5, lines 2-8, and Column 4, lines 3-9.

In view of the foregoing, Applicant submits that independent Claim 16 is allowable over Taenzer et al. Further, Applicant submits that independent Claim 19 is allowable for reasons analogous to those set forth above in relation to independent Claim 16. Finally, Applicant submits that Claims 17 and 18 which are dependent upon Claim 16, and Claims 20 and 21 which are dependent upon Claim 19, are allowable for corresponding reasons, and since such claims present further combinative features not disclosed by Taenzer et al.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

MARSH FISCHMANN & BREYFOGLE LLP

By: 

Thomas R. Marsh
Registration No. 31,039
3151 South Vaughn Way, Suite 411
Aurora, Colorado 80014
Telephone: (303) 338-0997
Facsimile: (303) 338-1514

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